

REMARKS

The specification has been amended to correct a typographical error. On page 13, line 23, "1.5nm" has been changed to --15nm--, in conformity with the description on page 32, line 27, or page 59, line 34.

Independent claim 16 stands rejected under § 102 on the basis of Smentkowski et al. '272, Matsunuma '738, Burguette '699, Yong et al. '385 and Lewis '504. Dependent claims 17-19 also stand rejected on various of these references. Claim 16 has been amended to avoid these references, and applicants respectfully traverse because the cited references do not disclose (or suggest) the use of monochromatic light or radiation having a wavelength corresponding to the absorption wavelength of the functional group.

The present invention provides a method of forming a magnetic disk having an improved lubricating film. The present invention achieves the foregoing object by a method as set forth in amended claim 16.

More specifically, the present invention achieves the object by: using substantially monochromatic far-ultraviolet radiation in the cross-linking step as the optical radiation; and choosing the wavelength of the far-ultraviolet radiation in correspondence to the absorption wavelength of the photocrosslinking functional group.

As a result of the use of the photocrosslinking functional group in combination with the monochromatic far-ultraviolet optical radiation, it becomes possible to achieve a highly cross-linked lubricating layer. As a result of the high degree cross-linking in the lubricating layer, high bonding rate and low surface free energy (high water contact angle)

are achieved for the lubricating layer, while the lubricating layer effectively fixes the lubricants and expels external contamination or water.

None of the references describe the use of monochromatic light or radiation having a wavelength corresponding to the absorption wavelength of the functional group.

Smentkowski teaches deposition of a lubricating layer on a DLC layer by applying optical radiation to a $C_nF_{2n+1}-X$ (X is halogen) gas. In this reference, the lubricating layer causes cross-linking with the DLC film as a result of decoupling of halogen caused by the optical radiation. In Smentkowski, any optical radiation ranging from UV radiation to X-ray may be used. Again, the reference fails to teach the use of monochromatic far-ultraviolet optical radiation having a wavelength chosen so as to correspond to the absorption wavelength chosen so as to correspond to the absorption wavelength of the photocrosslinking functional group.

Matsunuma teaches formation of a lubricating film on a DLC film by applying optical radiation to a fluorine monomer in an oxygen atmosphere. In Matsunuma, use of a UV lamp or laser is disclosed. Again, Matsunuma is silent about the feature of irradiating far-ultraviolet monochromatic radiation after application of a polymer lubricating agent or choosing of the wavelength in correspondence to the absorption wavelength of the photocrosslinking functional group.

Burguette teaches use of a lubricant soluble in ordinary solvent. It also teaches possible use of a mercury UV lamp for polymerization. Thus, Burguette is also silent about the use of the monochromatic far-ultraviolet radiation and the choice of the wavelength in correspondence to the absorption wavelength of the functional group.

Yong teaches improvement of bond rate in the outer zone of a magnetic disk with respect to the inner zone by applying optical radiation to the lubricant via a mask. Yong thus teaches use of ultraviolet radiation and use of ZDOL, AM3001 and XIP for the lubricant, but it fails to teach using a monochromatic optical source of far-ultraviolet radiation and optical cross-linking between the lubricants or the use of the wavelength chosen in correspondence to the absorption wavelength of the photocrosslinking functional group.

Lewis teaches irradiation of ultraviolet radiation and infrared radiation on a disk surface with an ordinary UV lamp having a broad spectrum including the wavelength of 1849A. Further, this reference uses perfluoropolyether and phosphazene lubricant. Thus, this reference fails to teach the features of use of lubricant having photocrosslinking functional group, use of far-ultraviolet monochromatic optical source, optical cross-linking between the lubricants or use of the wavelength chosen in correspondence to the absorption wavelength of the photocrosslinking functional group.

For the foregoing reasons, applicants believe that this case is in condition for allowance, which is respectfully requested. The examiner should call applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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